



# Technology News

**March 2005 issue**

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United States Department of  
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## **MESSAGE FROM THE DEPUTY CHIEFS**

Lawrence E. Clark and William E. Puckett

### **Landcare: A New Private-Public Partnership**

#### **Background**

Landcare Australia is the joint effort of two Australian organizations that represent the interests of production agriculture and natural resource conservation. It began in 1986, when farmers and conservationists joined to organize a coordinated approach to deal with land degradation and other serious environmental and productivity issues. Over time, Landcare has evolved into an even broader movement comprised of businesses, communities, landowners and government working not only in agricultural areas, but cities, coastal areas, and public lands.

#### **U.S. Landcare**

On June 18, 2004, key leaders in private industry, trade associations, production agriculture and conservation organizations incorporated the Council for U.S. Landcare Initiative, a new not-for-profit conservation organization. The purpose of U.S. Landcare is to rally broad public participation in a conservation movement that brings the resources of corporations and the strength of group action to bear on local conservation issues.

Currently, U.S. Landcare is actively forging a private-public partnership among people who work the land, communities, businesses and government to strengthen our Nation's ability to conserve natural resources, enhance profitability, and expand a community-wide conservation ethic. U.S. Landcare will strive to increase:

- Corporate support for and recognition of conservation work
- Application of science and evidence-based technologies
- Measurable conservation benefits on-the-ground
- Economic viability
- Knowledge, participation and leadership in local, collective group initiatives
- Broad public understanding of conservation needs and accomplishments
- Number of people involved in grassroots-driven conservation movements
- Leveraging of taxpayer dollars with private resources to achieve local and national resource conservation

One of the chief goals of U.S. Landcare will be to promote and raise the conservation ethic across the United States. U.S. Landcare will gather private support to mount a public awareness campaign. The campaign will create a unified identity for conservation and environmental efforts using the Landcare "caring hands" logo, which has been very successful in Australia.

#### **NRCS and U.S. Landcare**

Landcare conservation principles are consistent with NRCS's delivery of locally-led, voluntary conservation programs and technical assistance. There are numerous

potential benefits associated with an NRCS partnership with the U.S. Landcare Initiative. These benefits include:

- Leveraging the power and efficiencies of group action
- Accelerating the development of innovative conservation technology
- Increasing the numbers of volunteer and paid staff working toward NRCS conservation goals
- Collaborating in projects supported by corporate funds
- Enhancing NRCS's visibility

As with any new enterprise, program, or initiative there may be challenges. Overall, since there are such similarities between the Landcare approach and the NRCS delivery of conservation programs and technical assistance the risks of partnering with the U.S. Landcare Initiative are small.

We urge you to watch for opportunities in the near future to work with a local Landcare group and help expand NRCS' capacity to carry out its mission to help landowners conserve natural resources on private lands.



#### **CONSERVATIONIST'S CORNER**

Robin Heard, State Conservationist, Pennsylvania

#### **Pennsylvania Conservation Professionals Take to the Road to Provide Service**

While USDA Natural Resources Conservation Service (NRCS) employees work throughout the nation assisting farmers with conservation practices and USDA programs, eleven employees working in Pennsylvania were recently involved in a pilot program to provide better service to farmers and land managers, and to work more efficiently by using mobile offices.

Across the state, five soil conservationists, three grazing specialists, two biologists and an engineer were equipped with a mobile desk, laptop computer, portable printer, Geographic Positioning System (GPS) unit, cell phones, and a digital camera. Their portable technology operates through a power inverter connected to their vehicle's cigarette lighter that provides electricity to a mobile desk with multiple outlets.

"There were two goals of this pilot--to provide better service to our customers and to help our employees work more efficiently," stated Robin Heard, NRCS State Conservationist. "Once our employees arrive at the farm, we want them to be able to provide the farmer with as much service and information as possible to help in conservation decision-making without having to return to the office," Heard added. While employees in the pilot project often return to the farm to help carry out the

conservation decisions, the project resulted in a reduction in the number of trips back and forth to the office just to complete the initial planning work.

Employees working with the mobile office pilot are better able to discuss resource alternatives and decisions on the spot with the farmer and provide completed products while still at the farm. The amount of software and data that a laptop computer can comfortably handle at a fairly fast processing speed was definitely a factor in the success of the pilot. Customer Service Toolkit and ArcView on the laptops, along with a large quantity of geospatial data and the digitized soils information that is now available made remote work very feasible. And now, with aerial photography and USGS topographic quadrangles available, several counties of data can easily be stored on a laptop."

"The idea of having mobile offices has been in the making for many years," said Heard. "But the efficiency has only recently become available," she added. "In the past, the concept would have required a van or truck to carry a desk, file cabinets, computer and printer. Today, with modern technology, the reduced size of the equipment, and the availability of mobile desks, the work can literally be done in the front seat of a sedan or on the hood of a pickup truck," Heard added.

"Decisions made by the landowner can be viewed or changed on the spot and a high quality, hard-copy product can be provided immediately using portable color printers," said Heard. The use of the GPS unit allows for accurate planning and project layout of conservation practices such as contour strip location and forested riparian buffer plantings along streams. The GPS units also provide accurate acreage measurements for UDSA contracts.

After a 90-day pilot, Pennsylvania has called the pilot a complete success. Some employees were nervous about learning to use the technology and some found certain aspects of the technology more appealing than others, but all agreed that it definitely has benefits. Based on the pilot, Pennsylvania is phasing in more mobile offices as more laptops and other equipment become available.

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## **TECHNOLOGY TRANSFER**

### **#1 United States Department of Agriculture and People's Republic of China, Ministry of Agriculture Technology Exchange\***

A technical exchange sponsored by the USDA-NRCS International Programs Division, USDA-Foreign Agricultural Service (USDA-FAS) and with the People's Republic of China, Ministry of

Agriculture (PRC-MOA) was recently completed. The U.S. participants included: Michael Wilson (USDA-NRCS, Lincoln, Nebraska), John Kelley (USDA-NRCS, Raleigh, North Carolina) Catherine Jackson (USDA-FAS, Washington, DC), and Ming Chen (University of Florida, Belle Grade, Florida). The U.S. delegation traveled to China in December 2002. The China delegation, in return, visited the U.S. in August 2004.

### *China exchange:*

The exchange in China consisted of two phases, the first in Beijing and the second in Guangzhou. The Beijing portion of the exchange consisted of a series of informational meetings with government and university personnel. Scientists from the Ministry of China and the Chinese Academy of Agricultural Sciences conduct nationwide soil surveys that examine chemical usage and other environmental concerns. The U.S. delegates were able to examine soils in southern China that are important to the production of crops such as rice, vegetables, bananas, and oranges. The project was locally coordinated by the South China Agriculture University (SCAU), Guangzhou.

The purpose of sharing ideas and concepts was to provide a better understanding of the importance of land management techniques (fertilizer and compost additions) for maintaining soil productivity and ensuring long-term land use. Information gained by the Chinese agricultural community was helpful to the U.S. agriculturalists because of the similarities of many of the soils found in China to those in southern U.S. and Hawaii.

The initial exchange process was a great opportunity for project members from both the U.S. and China to gain a better understanding of the problems and opportunities that exist for agriculture in both countries.



State Conservationist Mary Combs with China delegate.

### *U.S. Exchange:*

The U.S. portion of the jointly funded technical exchange program took place in Iredell County, NC and Washington, DC during the first two weeks of August 2004. The Chinese delegation sent 3 representatives.

An orientation meeting was held in Iredell County to introduce the Chinese scientists to various U.S. county, state and Federal agencies' roles and responsibilities for agriculture development and environmental support. The rest of the field time was dedicated to examining soils and landscapes and collecting soil samples similar to those examined in Guangdong Province. The delegates' goal was to foster increased cooperation, interaction and transfer of technologies in the future.

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## TECHNOLOGICAL ADVANCES

### #2 Feed Management as a Tool for Manure Nutrient Reduction

A major portion of nutrients on a livestock farm comes from purchased feeds or feed ingredients. If the nutrients from these feeds are not removed from the farm either as animal products (meat, milk, eggs), as manure, or effectively recycled as a fertilizer resource in a cropping program, a whole farm nutrient imbalance may occur. If the nutrients that remain on the farm are not handled properly, water quality problems may become an issue. Several feed management practices can be used to reduce nutrient excretion by animals and help minimize nutrient buildup in the soil. Scientific studies have shown that adoption of one or more of these practices can have the potential to reduce manure nutrients by up to 40 percent.

**Feed management practices:** Potential feed management practices that might be considered by farmers include precision feeding (phase feeding, split-sex or group feeding); feed processing; feed additives; feed resources; crude protein reduction with the addition of synthetic amino acids; reduction of dietary phosphorus to the amount actually needed by the animal; use of phytase; use of more highly digestible feed ingredients, i.e., sources of available P and N; and routine feed analyses and diet formulation.

Precision feeding is the practice of changing the level of available nutrients presented to the animal based on age and level of production. Decreasing dietary protein level as the animal matures and protein needs lessen decreases excess protein that would be eliminated in the manure.

Split sex or group feeding is the practice of feeding animals of the same type, sex, size, or production level similar diets or amounts. This eliminates a need to “over feed” for the production of animals that require higher nutrient levels. This over feeding is a source of many of the excess nutrients produced on animal operations.

Feed processing changes the form of the feed in some manner, through grinding, steam flaking, pelleting, ensiling, or other methods, which makes the nutrients of the various feedstuffs more available. The simple act of grinding grain increases surface area for enzyme digestion and the likelihood that the feed nutrients will be in the digestive tract a sufficient amount of time for absorption, whereas they might be expelled in the manure virtually unchanged if they were fed as whole grain. Ensiling, pelleting, and steam flaking can all increase the digestibility or absorbability of feed nutrients, decreasing the likelihood that they will be excreted.

Feed additives, such as enzymes, •-agonists or other growth promotants, and amino acids, can increase the digestibility or absorption of nutrients. Phytase is an enzyme that, when added to feed, can increase the digestibility of organic phosphorus. Phytase application, with corresponding decreases in supplemental inorganic phosphorus, has been shown to reduce manure phosphorus excretion by up to 40 percent in poultry and swine.

Feed resources are genetically enhanced grains, by-product feeds, new or alternative grains, and feedstuffs produced on the farm where the manure will be deposited. Feed

resources that are new to the animal operation can be utilized to provide for the nutrient needs of the animal, and also decrease the nutrient output in the manure. New varieties of grain have been produced that contain a large percentage of available phosphorus. These grains can reduce manure phosphorus by as much as 40 percent in poultry and swine.

**Summary:** Other feed management practices are possible, need to be explored, and their benefits assessed. Feed management is one of the six core elements of the Comprehensive Nutrient Management Plan (CNMP). A conservation practice standard was adopted by NRCS in 2003 making feed management eligible for voluntary conservation financial assistance programs.

In 2004, NRCS signed a Memorandum of Understanding (MOU) with the American Registry of Professional Animal Scientists (ARPAS) to certify technical service providers (TSPs) in the area of feed management. TSPs working in this area, and certified by ARPAS as experts will be able to assist farmers in making feed management decisions, and in developing the feed management element of the operation's CNMP.

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### **#3 NRCS Snow Survey and Water Supply Forecast Program Monitors Mt. St. Helens Snowpack**

After several decades of inactivity, Mt. St. Helens awoke in late September 2004 with a series of ash and steam eruptions from the crater dome. A series of harmonic tremors also signaled the movement of lava upward into the crater and brought concern that an eruption, and subsequent rapid snowmelt, could once again flood the Toutle River valley.

The post-1980 Mt. St. Helens landscape is greatly diminished in its ability to capture and retain significant snowpacks on the north face which collapsed and blew outward into Spirit Lake. However, in the interest of public safety, the National Weather Service Northwest River Forecast Center requested NRCS Snow Survey and Water Supply Program to resurrect a procedure developed in May 1980 to estimate snowpack water content surrounding the mountain.

Immediately following the 1980 eruption, the NRCS installed additional Snow Telemetry (SNOWTEL) sites near Mt. St. Helens to monitor seasonal snowpacks. Six SNOTEL sites still surround the mountain and provide observations every six hours that are placed on the Oregon Snow Survey and Water Supply Forecasting Program webpage - <http://www.or.nrcs.usda.gov/snow/maps/sthelens.html> The six SNOTEL sites are used to create a weekly Mt. St. Helens Snowpack Analysis. The report is available from the following webpage <ftp://ftp.wcc.nrcs.usda.gov/data/snow/update/mshelens.txt>

The Snowpack Report summarizes the amount of water available from existing snowpacks in four quadrants, (north, south, east, west) that surround the mountain. Area-elevation curves constructed in 1980 are used to estimate the volume of water, in acre-feet, for each quadrant in three vertical zones (3,330' to 4,101', 4,100' to 4,900', and 4,900' to 8,200'). The water content can be used as input to flood routing models that estimate peak flows and travel times to downstream points.

Cascade Mountain snowpacks generally peak in early April and by July most snowpack has melted except for high-elevation glaciers which were significantly reduced in size when the mountain lost 1,314 feet during the 1980 eruption. Inside the crater, a glacier has formed between the lava dome and the south side of the crater. The USGS estimates this glacier contains 43,240 acre-feet of water that is affected by strength of eruptive activities within the dome. The National Weather Service includes this volume with the north quadrant snowpack to determine flood risk.

The USGS Cascades Volcano Observatory provides a wide variety of information describing Cascade Volcano seismic activity. The latest information for Mt. St. Helens can be found at the following webpage - [http://vulcan.wr.usgs.gov/Volcanoes/Cascades/CurrentActivity/2004/current\\_updates\\_20041210.html](http://vulcan.wr.usgs.gov/Volcanoes/Cascades/CurrentActivity/2004/current_updates_20041210.html)

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#### **#4 Key Notes on the Not to Exceed (NTE) Rates for TSP Conservation Technical Service**

##### **Definition of Not to Exceed (NTE) Rate**

- The definition of NTE Rates is the maximum payment rate, as determined by USDA, for technical services to USDA program participants. Current policy directs that NRCS reimburse the producer for technical services obtained at the NTE rate contained in the producer's conservation program contract. (Refer to USDA, NRCS PA-1782 September 2004: *Technical Service Providers Expanding Conservation Technical Assistance Capacity on Private Lands.*)

**Scope of NTE Rates** • NTE rates are established for each of the four major conservation practice components • planning, design, installation and checkout • for a total of about 160 conservation practices used by the agency. The rates are based on typically-sized conservation practice jobs that reflect the natural resource, regulatory, social, and economic conditions that exist within each of the 214 time team regions (TTRs, or sub-resource regions).

**Estimating NTE Rates** • The time estimates required for completing a conservation practice task are collected and organized in NRCS' Technical Assistance Cost for Conservation Practice (TACCP) database. The data are multiplied with NRCS staff cost per hour, plus overhead, for each needed discipline, to derive the estimates of the total technical assistance cost for a typically-sized practice component. The NTE rate for a specific component is derived by dividing the total component costs by the reported typical job size (in acres, feet or animal units). For providing NTE rates for a non-typically



sized practice component, regression curves establishing the relationship between unit costs and the job sizes (in acres or au, etc) are estimated using the data in the TACCP database.

**Update of FY-2004 NTE Rates --** NRCS updated the NTE rates based on an overhauled TACCP database and released the new NTE rates in August 2004. In addition to overhauling the 2003 TACCP data, Comprehensive Nutrient Management Plan (CNMP) data were collected and NTE rates are provided for operations that fit both land application and manure collection practices of CNMP. In comparison with the 2003 rates the updated 2004 NTE rates, that will be used throughout FY 2005, increase about 25 percent overall, and the overhead cost increased from 26 percent to 35 percent. Please refer to the public NTE rate site: <http://www.tsp-nte.nrcs.usda.gov/> .

**NTE Rates Link to Toolkit and ProTracts** – Currently users can go to the NTE website via TechReg on the NRCS website to find the NTE rates that each state would like to have farmers contracting directly with TSPs. One can copy the NTE rate of the applicable practices or practice components from the website and paste it onto the cost list of Toolkit, and use this information in Protracts for payment processing. Future integration of NTE rate system with Toolkit and ProTracts System is planned. Please refer to NRCS National Bulletin for exceptions to the NTE rates via <http://policy.nrcs.usda.gov/scripts/lps/iis.dll/NI/NI.htm>

**Future NTE Related Activities** – An update to data and methodology will be done at least annually or as needed. The older NTE rates are archived at

<http://www.tsp-nte.nrcs.usda.gov/TSPNTE03Archive/>. These archived rates should be used for checking usage of prior contracts.

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### **#5 Mausbach Retires After 38 Years of Service**

Maury Mausbach



Dr. Maurice J. Mausbach retired from NRCS/SCS after 38 years of service on December 31, 2004. He served as the Deputy Chief for Soil Survey and Resource Assessment for the Natural Resources Conservation Service for nearly seven years. In this position he was responsible for managing the Agency's National Cooperative Soil Survey Program, National Resources Inventory Program, homeland security, resource assessment, and climate change activities.

Dr. Mausbach also served as Director of the Soil Quality Institute, National Leader for Soil Technology, National Leader for Soil Survey Interpretations and as a research soil scientist at the National Soil Survey Center. He was project leader for the McCook County, South Dakota Soil Survey. Dr. Mausbach began his career in 1965 as a soil scientist student trainee in South Dakota.

Dr. Mausbach is a native of South Dakota. He received an undergraduate degree in agronomy from South Dakota

State University and his Master of Science and Doctor of Philosophy degrees in soil science from Iowa State University.

Dr. Mausbach has authored many research papers on soil genesis, wet (hydric) soils, soil interpretations, and

soil quality. He is a fellow of the Soil Science Society of America.

He and his wife, Connie, have two children and three grandchildren.

## #6 Personnel News

William Puckett was named Deputy Chief for Soil Survey and Resource Assessment

Thomas Christensen was named Deputy Chief for Programs

Kevin Brown was named Division Director, Financial Assistance Programs Division

Leonard Jordan was named Division Director, Easement Programs Division

Carolyn Adams is serving as the Acting Director of the East National Technology Support Center

### NRCS TECHNOLOGY NEWS

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